

SPECIAL MEETING.

Second Session, 26th May, half past seven o'clock, P. M.

Dr. CHAPMAN, Vice-President, in the Chair.

Mr. Samuel Breck read a communication, entitled, "A Historical Sketch of Continental Paper Money, Part II."

This paper was a continuation of one read by Mr. Breck before the Society in June, 1840, in which he gave the history of the paper currency of the Revolution, and showed its agency in securing the independence of the United States. In the paper now presented, he proceeded to demonstrate that the non-redemption of the continental money operated on the people of that period as nothing more than a moderate tax; that Congress never repudiated it; and that the omission to provide for its regular liquidation was not without striking precedents in the history of European states.

On the 10th of May, 1775, immediately after the battle of Lexington, Congress prepared its first emission of continental colonial bills, and on the 22d June, as soon as the news of the battle of Bunker Hill reached Philadelphia, two millions of Spanish milled dollars, so called, purporting to be for the defence of America, were put in circulation, the confederated colonies standing pledged for their redemption.

In November of the same year, three millions came out in bills of various value, as low as one-third, one-half, and two-thirds of a dollar, and from one dollar to eighty. The colonies were called upon to sink, *proportionally*, a sum of three millions. In fixing the proportion to redeem that amount, Virginia was rated the highest, and stood charged with

-	-	-	-	-	\$496,000
Massachusetts came next, at	-	-	-	-	434,000
Pennsylvania third, at	-	-	-	-	372,000
Maryland fourth, at	-	-	-	-	310,000

And in the fifth class there are four colonies, all rated alike; namely, Connecticut, North Carolina, South Carolina, and New York! Each of these stands

rated at	-	-	-	-	-	248,000
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Mr. Breck adverted incidentally to this scale, as indicating the relative wealth of the colonies at the beginning of the war, and remarked that New York, whose capital was then unoccupied by the enemy, is

rated at little more than half of Massachusetts, while Boston was in the possession of the British.

Before the close of 1775, three millions more were issued; but on the emission of a few millions in addition early the next year, difficulties began to arise. The bills were sometimes refused, confidence was weakened, and depreciation followed. Then came from Congress and the committees of safety threatening resolutions, denouncing the refractory. It was the first serious emergency, and required prompt relief. Patriotic men, who had the means, stepped forward to redeem the bills at par: some of them exchanged as much as a thousand pounds in silver for a like sum in paper. But the remedy was only temporary; for in May, 1776, five millions were again emitted, and in the autumn five millions more. Although some specie was imported, it could not avail against such profuse issues. Credit, already on the wane, continued to sink. Nor could Congress ever after fully restore it. The states did not respond to their call for aid.

The power of taxing was virtually denied, by its shackled conditions, in the articles of confederation; and paper continuing to depreciate, an attempt was made, in imitation of the mother country, to raise a revenue by the establishment of a national lottery. The first trial was a failure; for the scheme, which was to sell tickets, *for specie*, at twenty dollars, and pay the prizes in treasury notes, bearing four per cent. interest, did not induce many to adventure; so that no other resource was left for the prosecution of the war, but a fresh emission of paper money. The people however refused to sell their produce for it at par, and Washington was authorized to seize the supplies for the army wherever he could find them, and imprison those who rejected the bills offered in payment.

Having delegated power to compel the circulation of their bills, by military force, Congress on the 27th December, 1776, sent forth another sum of five millions. This was followed up, in the early part of 1777, by further efforts to support the credit of their bills; for which purpose a declaration was published, asserting that they ought to be paid *in full*; fulminating anew against those who impaired their credit, by raising, as the resolution says, the nominal value of gold and silver; and calling upon the states to punish, by forfeitures and penalties, all those who refused to sell their lands, houses, and goods, for continental paper money at specie value.

The whole amount of paper money issued during the war was about four hundred millions of dollars; but the collections made by

the continental government in various ways cancelled from time to time the one-half: so that the maximum of circulation at no one period exceeded two hundred millions. Nor did it reach that sum, until its depreciation had compelled Congress to take it in, and pay it out, at the rate of forty paper dollars for one in hard money.

It kept nearly at par for the first year, during which period only nine millions were issued; an amount about equal to the specie then held in all the colonies. And when used in that moderate way, it passed with very little depreciation; but soon after, when the emission increased rapidly, it fell proportionably in value, going on from year to year in its downward course, until Congress, as we have seen above, fixed the scale by law at forty for one. But million following million in quick succession lessened its exchangeable rate from day to day to the agio of 500, and then 1000 for one; when it ceased to circulate.

Congress had exchanged some of the notes at forty for one, by giving the holder loan office certificates at par, and offered to redeem the whole in the same way, at 1000 for one, when they had sunk to that price. But those very loan office, and other certificates of debt, bore in market no higher price than two shillings and sixpence on the pound, or eight dollars for one; so that very few availed themselves of that offer.

Public securities of similar character, but bearing various names, such as loan office certificates, depreciation certificates, final settlements, &c., were given also to the public creditors who had demands for moneys lent, supplies furnished, services rendered, &c., and these together constituted the Congressional debt at the end of the war. They consisted of obligations or bonds, bearing interest at six per cent., and were entirely distinct in character and tenor from the money bills, which bore no interest, and were used altogether as currency. The value of those certificates in market, as I have already said, was not more than seven or eight for one, until the adoption of the present Constitution in 1789, when they were funded, and rose to par.

In the Journal of Congress of the 29th April, 1783, an estimate is given of the whole revolutionary debt; except the paper money; and it stands thus:—

1. Foreign debt to France and Holland	\$ 7,885,085
2. Domestic debt, in various certificates, as above	34,115,290
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	\$42,000,375

The foreign, bearing interest at four and five per cent., and amounting to	\$ 369,038 06
The domestic at six per cent., and amounting to	2,046,917 04
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	\$2,415,956 10
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When the Constitution, by which we are now governed, went into operation, Alexander Hamilton, the first Secretary of the Treasury, added to the domestic debt the claims held by several states against the national exchequer, to the amount of \$21,500,000, and then funded the whole; putting a part on interest at six per cent. immediately; postponing a part without interest for ten years, then to bear six per cent.; and the remainder bearing immediate interest at three per cent.

The arrears of six years' interest were added; which, with some other unsettled claims, made the whole debt amount to ninety-four millions.

Accustomed as we are, at the present day, to the large expenditure of the federal government, we may well be astonished at the economy of the first year of Washington's administration, when the civil list was estimated at 208,000 dollars, and the war department at only 137,000, including even the Indian supplies.

The establishment of a revenue to pay the interest on the debt in 1789, was equivalent to an increase of capital, by bringing that debt to par, of nearly one hundred millions, the greater part of which was held by our own citizens. This was the cause of immediate prosperity, and of the brilliant career which continued for many years after. Every dollar of this aggregate debt was honourably paid.

Mr. B. adverted to the difficulties by which the statesmen of the Revolution found themselves embarrassed on all questions of revenue and finance. They had the best disposition, he said, to pay that currency, and they professed to have the ability so to do. They felt themselves bound in honour to discharge, at their full value, bills emitted by themselves, and bearing on their face a solemn engagement to redeem them in Spanish dollars, or the value thereof, in gold or silver. To do this, however, required a season of tranquillity; but the country was invaded by land and by water; it required power to levy taxes, and this was denied them; it required the industry of peaceful times to enable the people to contribute; but the war, in constant activity, baffled every attempt at regular employment. Congress had not even a choice of evils; they had no alternative.

One source of revenue only was at their command, and that was the emission of bills of credit. The very necessity of the case forced them to misuse and abuse it; for even in its depreciated condition, paper money offered facilities so attractive, that the great men at the head of affairs, always intending to redeem it, were glad to find the people willing to receive, at the current exchange, that which could be so easily and liberally supplied.

“Who,” said a member, during a debate upon this subject, “will consent to load his constituents with taxes, when we can send to our printer and get a wagon load of money, and pay for the whole with a quire of paper?” And with wagon loads, thus cheaply obtained, they carried on the campaigns of the two years, 1778 and 1779, keeping an army of thirty or forty thousand men in the field; issuing paper, to the amount of sixty-three millions for the former year, and seventy-two millions for the latter; and thus, with an active printing press, and a few commissioners, hired by the day or by the job to sign the bills, ways and means were found to defray almost the whole expense of the civil list, the army and navy, and contingencies. There was, indeed, a little hard money passing through the treasury. The exact sums received in both those years, having been officially reported to Congress, stand recorded on their journals. If it were not attested in this authentic shape, it would be difficult to believe it. The aggregate of gold and silver received into the treasury for the year 1778, was only seventy-eight thousand six hundred and sixty-six dollars; and for the year 1779, the sum of seventy-three thousand dollars: so that the whole machinery of government was carried on, for two entire years, as far as concerned the agency of specie, with one hundred and fifty-one thousand six hundred and sixty-six dollars. So small an expenditure in metallic currency, shows the powerful agency of paper in the belligerent operations, at that critical period; performing as it did, in spite of counterfeits and depreciation, the office of hard money.

This handful of solid coin, which, in gold would weigh only seven hundred pounds, and might be put into a wheelbarrow, was all that came, as we have seen, into the public chest for two years; and we may not be surprised at government being so chary of it, as to refuse General Washington’s demand of a small share, to pay a part of the bounty to enlisted soldiers. In denying him, they declared that the precious metals must be kept for the commissaries of prisoners, to be used where paper would not pass.

Congress was driven to the abuse, which ruined the credit of paper money, by the illiberal terms of the confederation, and the reluctance of some of the states to impose taxes. It was authorized only to recommend—not to legislate—and it failed in almost every appeal for pecuniary aid. It was even denied by the single veto of Rhode Island the establishment of an impost of only five per cent. on imported goods, which after great difficulty and delay had been ratified by all the other states. Unanimity being a constitutional requirement; that measure, so obviously necessary, so moderate in its amount, so gentle and equal in its operation, was defeated by the negative of the smallest state in the confederation. Nor could the entreaty of Congress, contained in a long argumentative report addressed to Rhode Island, and drawn up by Alexander Hamilton, James Madison and Thomas Fitzsimmons, cause that state to retract.

But the last day of the paper currency's usefulness was close at hand. It fell to 1000 for 1 in the early part of 1781, and of course went wholly out of circulation at that period. Two hundred millions of dollars of continental paper lost all their value, and were laid aside. The people who bore the brunt of an eight years' war, and victoriously established independence, sustained without a murmur the whole loss, and voluntarily reduced to utter nothingness the greatest item in the cost of the revolution; and thus waved all claim upon posterity for its payment.

This was, undoubtedly, a severe tax; yet, when examined with care, it will be found less heavy than it seems at first sight. Let us take the largest sum by which the people could ever have been affected—say three hundred millions at twenty for one, which is only half the rate fixed by Congress. Twenty for one on three hundred millions will give fifteen millions of sound money. These fifteen millions having been used as currency for six years, give an annual average of two millions and a half. That sum, among a population of three millions, would not be a poll tax of one dollar; or if the three millions of inhabitants be divided into families of six persons each, making five hundred thousand families, the annual loss per family would be only five dollars! In all probability, the real loss was less to many than this proportion; because the bills passed with great activity from hand to hand, to their last days, even when five hundred for one; never remaining locked up, nor long withdrawn from circulation. They were divided too into small sums, from one dollar to eighty, and always convertible at the current exchange into every kind of real and personal property; and in their hourly rapid

passage left with each temporary possessor the trifling loss only of their daily depreciation.

Mr. Breck reviewed the unavailing efforts, which had from time to time been made by Congress for sustaining the credit of the continental issues, the appeals to the State Legislatures and to the people, the attempted levy of a monthly tax, and the perilous resort, in the last emergency, to the acts of limitation of prices, the tender laws, and denunciation. He referred particularly to the legislation, by which Pennsylvania endeavoured, in December, 1780, to support the credit of its "Island" paper money, and the penalties it denounced against all who should refuse to accept it at par, extending even to confiscation and imprisonment. He spoke too of the "Funding Act," as it was termed, which was passed by that state in March, 1785, which denied to assignees the right of receiving interest on a certain class of its public debts; and he remarked with severity on the proposition, which was urged soon after by some political writers, to pay off these debts at the depreciated rates which this very legislation had contributed to induce. He commented at large on the injustice and demoralizing character of all these expedients, and traced their consequences, by numerous references to published history and cotemporary letters, in wild speculation, broad spreading poverty, the destruction of social confidence, and the depravation of morals.

Mr. Breck then alluded to the shutting up of the exchequer for two years by Charles the Second, and the consequent suspension of proceedings for the collection of debts, as given by Burnet; to the refusal of the Spanish crown to recognise the debt of forty-five millions contracted by Philip the Fifth; to the deferred payment of the bills of the Marquis of Vaudreuil on the French treasury in 1782, when, to protect the merchants who had negotiated them from damages, the king retained the bills, and forbade his notaries making any protest. These and other illustrations of permanent as well as occasional delinquency, on the part of foreign governments, were presented by Mr. B. only as showing that the fiscal irregularities of our Revolutionary treasury were not without precedent abroad.

The communication proceeded to sketch the history of the immense speculations in stocks and public securities, which followed the adoption of the funding system and the institution of the first Bank of the United States; and the still more enormous landed transactions of that day, in the monopoly by individuals of millions of acres. It concluded by a comparison of the personal and domestic habits of our people in the later years of the last century, their religious ob-

servances, opinions, and feeling, the temper of their political discussions, the impartiality of their tone towards foreign nations, and the diffusive nationality of their patriotism, with those which belong to the Americans of more recent times: and recognising the severity and truth of the imputations to which the extravagance of public and private speculation has subjected the present generation for a season, Mr. B. denied that an impartial review of the whole history of our country would give reason to apprehend the prospective degeneracy of American character.

Mr. Thomas Biddle, adverting to a part of Mr. Breck's paper, remarked that some nine years after the legislation of Pennsylvania which had been mentioned, that state honourably discharged in full the principal and interest of her debt, for which certificates had been issued. It was classed as follows:

- 1st. New loan, issued in exchange for evidences of debt of the United States (or Congress) to her citizens.
- 2d. Militia, issued in payment of the services rendered by her citizens during the war.
- 3d. Depreciation, issued to make good to her officers and soldiers the loss by continental money in their pay.
- 4th. Dollar money, issued by the continental Congress, assessed on and guarantied by her.
- 5th. All paper money, issued after the continental money from its depreciation had ceased to be current.

Professor Rogers, of the University of Pennsylvania, read a paper by himself and his brother, Prof. W. B. Rogers, of the University of Virginia, on the phenomena of the great earthquakes which occurred during the past winter, one in this country and the other in the West Indies, and on a general theory of earthquake motion, by which they propose to elucidate several points in geological dynamics.

The essential or characteristic phenomena in every earthquake, as distinguished from those which are occasionally concomitant, are a peculiar wave-like motion of the ground, and a rapid tremulous jar. This was originally stated by the Rev. Jno. Michell, of Cambridge, England, whose generalization the authors confirm by the facts they have collected in relation to the late American disturbances. The undulatory movement, which they conceive to be the *cause* of the vi-

bratory one, extends, usually, to a greater distance than this latter from the centre of the earthquake. Observations, gathered from various authentic sources, were cited to prove that the rocking motion is of the nature of a true *billowy pulsation*; evidence deemed conclusive on this head being derived from the earthquake of Conception in 1835; from that of Hayti in May, 1842; and from that of the Windward Islands in February, 1843.

Professor Rogers next illustrated the manner in which these earthquake undulations advance, and showed, by aid of a diagram map of the United States, the lines along which the shock of the 4th of January last was *simultaneous*, throughout an ascertained distance of at least 500 miles in a N. N. E. and S. S. W. direction.

By a comparison of the times when this shock occurred at the various places affected by it, the *direction, velocity, and mode of advance* of this earthquake, were satisfactorily demonstrated. Thus it was shown, that the area agitated at any given instant was *linear*, being directed N. N. E. and S. S. W., and that this line of synchronism moved to the E. S. E. parallel to itself, and with the enormous velocity of at least thirty-two miles per minute. Numerous observers concur to establish the above inference of the direction taken by the earthquake, by stating that the oscillation itself was from the west to the east. Professor Rogers acknowledged his indebtedness to the Secretary of War and other gentlemen, for aid in collecting much valuable information respecting this earthquake, from remote localities.

He next referred to the recent fearful earthquake of the Windward Islands, which seemed to have its centre of violence in the region of Guadeloupe and Antigua. A body of details had been collected in regard to the phenomena of this shock, showing the exact time of its occurrence at each locality, from the Coast of Guiana, through the Eastern Antilles, to Bermuda, from which latter point accurate and useful facts had been promptly communicated by Governor Reid. The length of the region shaken, estimated from Demerara to New York, was about 2300 miles, and the greatest width of the belt, from Bermuda to Savannah, about 770 miles. As frequently the case in earthquakes, the disturbed zone was narrowest in the vicinity of the volcanic portion of the disturbed tract. This earthquake seems to have been generated along a nearly north and south line, running through Martinico, Guadeloupe, and Antigua, to the continent of South America and to Bermuda. The nature of the motion was identical with that attributed to earthquakes generally, only differing

from the Mississippi shock in the greater intensity of the action. Accompanying the characteristic undulation and jar, occurred numerous parallel fissures in the earth, which repeatedly gaped and closed, while steam, warm water, and hot sulphurous vapours, found their escape. These phenomena are frequent concomitants of violent earthquakes.

This earthquake was nearly *simultaneous* throughout the extended zone, which embraces the Eastern Antilles, Guiana, and Bermuda, though it came later to the coast of the United States by an interval of twenty-nine or thirty minutes. Its velocity of transmission was very nearly twenty-seven miles per minute. Thus simultaneous, or nearly so, along the north and south line passing through the volcanic axis of the Windward Islands, it was also approximately simultaneous, when felt some twenty-nine or thirty minutes later in a N. N. E. and S. S. W. belt, embracing the Atlantic cities of the United States, from Savannah to New York. This may be accounted for, by conceiving the earthquake to have been propagated from the axis in which it originated in a dilating *elliptical* form, and the synchronal line of the Atlantic cities to have coincided with the north-western side of the ellipse, opposite the end of the generating axis or fissure.

Passing, next, to the theory of earthquake motion, under which they propose to unite these facts and generalizations, the authors of the communication attribute the wave-like motion of the surface in earthquakes to an *actual pulsation*, or system of waves, in the molten matter beneath the earth's crust, occasioned by a sudden linear rending and immediate collapsing of the crust from excessive upward tension, with explosive escape of highly elastic vapours. These waves in the internal fluid lava will impart their undulation to the overlying crust, and lead to all the concomitant phenomena of earthquakes. If the oscillation proceed from a very elongated axis of disruption, the periphery of the earthquake will assume the *elliptical* form; but should it originate in a relatively short fissure, or in a mere focal point, like the vent of a volcano, it will be approximately *circular*.

These views of the origin of earthquakes furnish a new argument in support of the doctrine of central heat; since the frequency of earthquakes in almost every district of the globe implies, that the internal igneous fluid must be absolutely co-extensive with the surface.

As respects the amplitude of the individual undulations, Professor Rogers conceives that it is practicable, in certain instances, to com-

pute it with some approach to accuracy, by more than one method. While the breadth of the crust-waves must vary with the energy of the earthquake, it can be shown to have been, in some of the more violent of these convulsions, enormously great; in the earthquake of Conception probably ten or eleven miles, and in that of Lisbon as much as twenty-five miles.

Professor Rogers concluded by stating, that the lateness of the hour induced him to withhold the sequel of his paper, the design of which was to apply the generalizations which he had presented, to the explanation of the origin of those great flexures of the strata so magnificently displayed in the mountain chain of the United States; and he announced his purpose to resume the subject at some more appropriate season.

SPECIAL MEETING.

Third Session, 27th May, 10 o'clock, A. M.

Dr. PATTERSON, Vice-President, in the Chair.

The Secretaries presented a letter addressed to them by Mr. Sears C. Walker, and Professor E. Otis Kendall, of the High School, "On the Great Comet of 1843." This letter is dated High School Observatory, May 27, 1843, and, omitting a few paragraphs, is as follows:—

Gentlemen,—We avail ourselves of the centennial meeting of the members of this Society to lay before them, generally, the reasons which induce us to believe that the recent visitor is a comet of short period, only $21\frac{7}{8}$ years, and that it is identical with those of February, 1668, and of December, 1689. An early suggestion of its identity with that of 1668 was made, we believe, by Prof. Peirce, in a lecture delivered at Boston on the 23d of March last. Shortly before that date, viz. March 20, it appears to have been noticed by Mr. Cooper, of Nice, in a letter to Schumacher, published in the London Times. The question of their identity has been discussed by Prof. Schumacher and Mr. Petersen, of Altona. The latter applies Galle's elements to the perihelion passage in 1668, and Prof. Schumacher expresses an opinion in favour of their identity. The subject has been more fully discussed by Mr. Henderson, the Astronomer Royal